

It is claimed:

1. A hard surface cleaning composition comprising
 - (a) an effective amount of at least one low-
5 volatile non-VOC evaporative organic solvent that has
limited solubility in water of less than 20% and reduces
surface tension of the composition to less than 40
dynes/cm;
 - (b) an effective amount of at least one surfactant
10 which is amphoteric, anionic, nonionic, cationic, or a
mixture thereof,
 - (c) optionally an effective amount of at least one
co-solvent which is different from (a) and when said co-
solvent is a low volatile non-VOC solvent, said co-
15 solvent has at least a different water-solubility or
different surface tension reduction capacity from said
solvent of (a); and
 - (d) an aqueous carrier;wherein said composition has less than about 4% by wt.
20 volatile organic compound (VOC) content.

2. A hard surface cleaning composition comprising
 - (a) greater than 0 to about 4% by wt. of at least
one low-volatile and/or high-volatile evaporative organic
25 solvent that has limited solubility in water of less than
20% and reduces surface tension of the composition to
less than 40 dynes/cm;
 - (b) greater than 0 to about 5% by wt. of at least
one surfactant which is amphoteric, anionic, nonionic,
30 cationic or a mixture thereof;

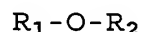
(c) from 0 to about 30% by wt. of at least one co-solvent which is different from (a) and when said co-solvent is a low volatile non-VOC solvent, said co-solvent has at least a different water-solubility or
5 different surface tension reduction capacity from said solvent of (a); and

(d) a balance of an aqueous carrier;
wherein said composition has less than about 4% by wt. volatile organic compound (VOC) content.

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3. The hard surface cleaning composition of claim 1 wherein said at least one low-volatile non-VOC evaporative organic solvent is a glycol ether having a formula -

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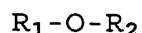


wherein R_1 is a C_1 - C_8 linear, branched or cyclic alkyl or alkenyl optionally substituted with -OH, -OCH₃, or -OCH₂CH₃ and R_2 is a C_1 - C_6 linear, branched or cyclic alkyl or alkenyl substituted with -OH.

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4. The hard surface cleaning composition of claim 2 wherein said at least one low-volatile non-VOC evaporative organic solvent is a glycol ether having a formula -

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wherein R_1 is a C_1 - C_8 linear, branched or cyclic alkyl or alkenyl optionally substituted with -OH, -OCH₃, or -OCH₂CH₃ and R_2 is a C_1 - C_6 linear, branched or cyclic alkyl or alkenyl substituted with -OH.

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5. The hard surface cleaning composition of claim
1 wherein said surfactant is amphoteric.

6. The hard surface cleaning composition of claim
2 wherein said surfactant is amphoteric.

7. The hard surface cleaning composition of claim
3 wherein said surfactant is amphoteric.

8. The hard surface cleaning composition of claim
4 wherein said surfactant is amphoteric.

9. The hard surface cleaning composition of claim
5 wherein said surfactant is disodium
cocoamphodipropionate.

10. The hard surface cleaning composition of claim
6 wherein said surfactant is disodium
cocoamphodipropionate.

11. The hard surface cleaning composition of claim
1 wherein said at least one low-volatile evaporative
organic solvent is ethylene glycol n-hexyl ether.

12. The hard surface cleaning composition of claim
2 wherein said at least one low-volatile evaporative
organic solvent is ethylene glycol n-hexyl ether.

13. The hard surface cleaning composition according
to claim 9 wherein said at least one low-volatile non-VOC
evaporative organic solvent is ethylene glycol n-hexyl
ether.

14. The hard surface cleaning composition according to claim 10 wherein said at least one low-volatile non-VOC evaporative organic solvent is ethylene glycol n-hexyl ether.

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15. The hard surface cleaning composition according to claim 1 wherein said at least one surfactant of (b) comprises an amphoteric surfactant and an anionic surfactant.

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16. The hard surface cleaning composition according to claim 2 wherein said at least one surfactant of (b) comprises an amphoteric surfactant and an anionic surfactant.

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17. The hard surface cleaning composition according to claim 3 wherein said at least one surfactant of (b) comprises an amphoteric surfactant and an anionic surfactant.

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18. The hard surface cleaning composition according to claim 4 wherein said at least one surfactant of (b) comprises an amphoteric surfactant and an anionic surfactant.

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19. The hard surface cleaning composition according to claim 15 wherein said amphoteric surfactant is disodium cocoamphodipropionate and said anionic surfactant is a sulfate and/or sulfonate compound.

20. The hard surface cleaning composition according to claim 16 wherein said amphoteric surfactant is disodium cocoamphodipropionate and said anionic surfactant is a sulfate and/or sulfonate compound.

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21. The hard surface composition according to claim 19 wherein said at least one volatile evaporative organic solvent is ethylene glycol n-hexyl ether.

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22. The hard surface composition according to claim 20 wherein said at least one volatile evaporative organic solvent is ethylene glycol n-hexyl ether.

15 23. The hard surface cleaning composition according to claim 1 wherein said composition has a pH of 2 or above.

20 24. The hard surface cleaning composition according to claim 2 wherein said composition has a pH of 2 or above.

25 25. The hard surface cleaning composition according to claim 1 wherein said composition has a pH of 2 to 13.

26. The hard surface cleaning composition according to claim 2 wherein said composition has a pH of 2 to 13.

30 27. The hard surface cleaning composition according to claim 1 wherein said at least one co-solvent of (c) is propylene glycol.

28. The hard surface cleaning composition according to claim 2 wherein said at least one co-solvent of (c) is propylene glycol.

5 29. The hard surface cleaning composition according to claim 3 wherein said at least one co-solvent of (c) is propylene glycol.

10 30. The hard surface cleaning composition according to claim 4 wherein said at least one co-solvent of (c) is propylene glycol.

15 31. The hard surface cleaning composition according to claim 5 wherein said at least one co-solvent of (c) is propylene glycol.

20 32. The hard surface cleaning composition according to claim 6 wherein said at least one co-solvent of (c) is propylene glycol.

33. The hard surface cleaning composition according to claim 7 wherein said at least one co-solvent of (c) is propylene glycol.

25 34. The hard surface cleaning composition according to claim 8 wherein said at least one co-solvent of (c) is propylene glycol.

30 35. The hard surface cleaning composition according to claim 9 wherein said at least one co-solvent of (c) is propylene glycol.

36. The hard surface cleaning composition according to claim 10 wherein said at least one co-solvent of (c) is propylene glycol.

5 37. The hard surface cleaning composition according to claim 1 wherein said at least one co-solvent of (c) is monoethanolamine.

10 38. The hard surface cleaning composition according to claim 2 wherein said at least one co-solvent of (c) is monoethanolamine.

15 39. The hard surface cleaning composition according to claim 3 wherein said at least one co-solvent of (c) is monoethanolamine.

20 40. The hard surface cleaning composition according to claim 4 wherein said at least one co-solvent of (c) is monoethanolamine.

 41. The hard surface cleaning composition according to claim 5 wherein said at least one co-solvent of (c) is monoethanolamine.

25 42. The hard surface cleaning composition according to claim 6 wherein said at least one co-solvent of (c) is monoethanolamine.

30 43. The hard surface cleaning composition according to claim 7 wherein said at least one co-solvent of (c) is monoethanolamine.

44. The hard surface cleaning composition according to claim 8 wherein said at least one co-solvent of (c) is monoethanolamine.

5 45. The hard surface cleaning composition according to claim 9 wherein said at least one co-solvent of (c) is monoethanolamine.

10 46. The hard surface cleaning composition according to claim 10 wherein said at least one co-solvent of (c) is monoethanolamine.

15 47. The hard surface cleaning composition according to claim 25 wherein said at least one co-solvent of (c) further includes monoethanolamine.

20 48. The hard surface cleaning composition according to claim 26 wherein said at least one co-solvent of (c) further includes monoethanolamine.

25 49. The hard surface cleaning composition according to claim 1 wherein said at least one co-solvent of (c) is isopropanol.

30 50. The hard surface cleaning composition according to claim 2 wherein said at least one co-solvent of (c) is isopropanol.

30 51. The hard surface cleaning composition according to claim 3 wherein said at least one co-solvent of (c) is isopropanol.

52. The hard surface cleaning composition according to claim 4 wherein said at least one co-solvent of (c) is isopropanol.

5 53. The hard surface cleaning composition according to claim 5 wherein said at least one co-solvent of (c) is isopropanol.

54. The hard surface cleaning composition according
10 to claim 6 wherein said at least one co-solvent of (c) is isopropanol.

55. The hard surface cleaning composition according to claim 15 wherein said at least one co-solvent of (c)
15 is isopropanol.

56. The hard surface cleaning composition according to claim 16 wherein said at least one co-solvent of (c) is isopropanol.

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57. The hard surface cleaning composition according to claim 19 wherein said at least one co-solvent of (c) is isopropanol.

25 58. The hard surface cleaning composition according to claim 20 wherein said at least one co-solvent of (c) is isopropanol.

59. The hard surface cleaning composition according
30 to claim 1 further comprising a polymer or a copolymer.

60. The hard surface cleaning composition according to claim 59 wherein said polymer is an acrylic polymer.

61. The hard surface cleaning composition according to claim 59 wherein said copolymer is an acrylic copolymer.

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62. A hard surface cleaning composition comprising
(a) greater than 0 to about 4% by wt. of at least one low-volatile and/or high-volatile evaporative organic solvent that has limited solubility in water of less than
10 20% and reduces surface tension of the composition to less than 40 dynes/cm;

(b) greater than 0 to about 5% by wt. of at least one surfactant which is amphoteric, anionic, nonionic, cationic or a mixture thereof;

15 (c) from 0 to about 30% by wt. of at least one co-solvent which is different from (a) and when said co-solvent is a low volatile non-VOC solvent, said co-solvent has at least a different water-solubility or different surface tension reduction capacity from said
20 solvent of (a);

(d) a polymer or a copolymer; and

(e) a balance of an aqueous carrier;

wherein said composition has less than about 4% by wt. volatile organic compound (VOC) content.

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63. A hard surface cleaning composition according to claim 62 wherein said polymer is an acrylic polymer.

64. A hard surface cleaning composition according
30 to claim 62 wherein said copolymer is an acrylic copolymer.

65. A hard surface cleaning composition according to claim 62 wherein said solvent of (a) is a glycol ether, said at least one surfactant of (b) includes an amphoteric surfactant and an anionic surfactant, said at
5 least one co-solvent of (c) includes an aliphatic alcohol, a glycol and an alkanolamine.